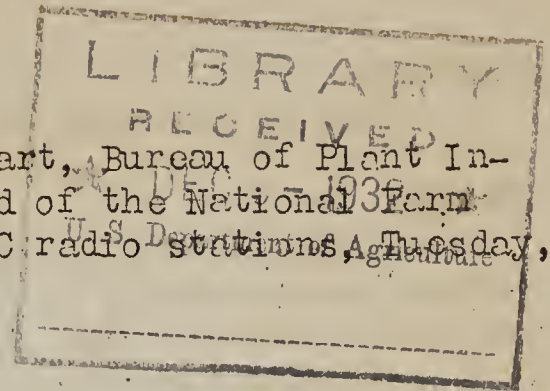


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THE GARDEN CALENDAR

A radio discussion by W. R. Beattie and William Stuart, Bureau of Plant Industry, delivered in the Department of Agriculture period of the National Farm and Home Hour, broadcast by a network of 48 associate NBC radio stations, Tuesday, November 22, 1932.



ANNOUNCER:

In our Garden Calendar today, W.R. Beattie and William Stuart, of the Bureau of Plant Industry, are going to tell you about what the Department and State workers have done to improve the potato crop. Beattie, will you lead the discussion?

BEATTIE:

Hellow folks! Salisbury has told you that Stuart and I are going to talk about improving the potato crop. Years ago, we heard potato growers complaining about their favorite varieties of potatoes "running out," that they didn't yield good crops any more, and that they had to change to a new variety. We don't hear so much about that now-a-days, but right here, I'm going to ask Dr. Stuart to tell us some of the important things that the Department and State workers have accomplished in potato improvement during recent years. What do you say, Stuart?

STUART:

All right, but, of course, you understand that good seed is the first essential for a good yield. The theory, so prevalent a decade or two ago, that our commercially cultivated varieties of potatoes naturally "run out" when grown in a given locality for a period of years has been exploded.

BEATTIE:

Do you mean to say that potatoes don't "run out?"

STUART:

They do not, that is, if they're protected from diseases. It is now known that the so-called "running-out" of potatoes was due to diseases of the seed-stock. The horticulturist, the disease specialist, and the wide-awake potato grower all know that most of our troubles with seed potatoes in the past, have been due to a number of virus diseases. These diseases weakened the plants, and cut down the yield of marketable potatoes.

BEATTIE:

Do you mean to say that a potato grower can maintain his seed stock reasonably, if not wholly free from virus diseases?

STUART:

That's exactly what I mean. It can be done mainly by selection methods. These methods have developed gradually, one has led to the adoption of another. The first step was the selection of the progeny of individual plants. This is called the hill selection method. The next step was the planting of selected individual tubers on the tuber unit basis.

(over)

BEATTIE:

What do you mean by the tuber unit basis?

STUART:

Well, by that I mean cutting each potato into four parts, and planting the pieces consecutively in the row. This method made it easier to recognize diseased units and remove them. We have carried the tuber unit plan a step further through the development of the tuber index method of disease elimination.

BEATTIE:

The "tuber index" method - - - What do you mean by that?

STUART:

By the tuber-index method, we first number the tubers to be tested. Then we cut a seed piece from each tuber in the late fall or early winter, and give it the same number as the tuber. These pieces may be grown in a greenhouse in the North, or in the open field in the South. The numbers of all seed pieces producing diseased plants are recorded, and the tubers from which these pieces were taken are discarded. We then take all of those that are free from diseases according to the test and plant them in a seed plot on the tuber unit basis. In this way, it is possible for us to discard practically all of the virus-infected tubers, and thereby eliminate the hazard of field transmission of diseases.

BEATTIE:

How long have you and your associates in the Department been engaged in this potato-improvement work?

STUART:

Oh, I should say we have been at it for twenty years or more. We have constantly tried to improve the quality of seed potatoes by encouraging the adoption of every method by which such improvement could be accomplished. Much has been done by way of securing varietal purity and trueness to name. In the early days, it was not at all uncommon for seed potato dealers to substitute one variety for another. Sometimes a late-maturing variety was substituted for an early. Such instances are extremely rare today. I think that the Department's greatest contribution to the potato industry has been in the realm of potato breeding and selection.

BEATTIE:

What have been the primary objectives of your potato-breeding work?

STUART:

To develop varieties that are resistant to the many diseases of the potato. The earlier efforts along this line were directed toward the creation of varieties resistant to Late Blight, which at that time was considered the greatest menace to the potato industry. It was soon found that while it was possible to produce seedlings that were resistant to diseases, they possessed characteristics which rendered them undesirable from a commercial standpoint.

BEATTIE:

From what angle are you tackling the problem at present?

STUART:

Well, largely toward the creation of varieties that are resistant or immune to the virus diseases such as the several types of mosaic, leafroll, spindle-tuber, etc.

BEATTIE:

Are you getting results?

STUART:

Yes, we are happy to say that we now have a large number of promising seedlings that are resistant to the disease known as Mild Mosaic. One of these, which we have named the Katahdin, has been introduced and another is to be named and distributed in 1933. We have many more that will be introduced in the near future. We believe that we have potato breeding material available which will permit of more rapid progress in the creation of varieties resistant to other forms of virus diseases and also to late blight.

BEATTIE:

Can you form an estimate of what the creation of such varieties would save the potato growers of this country?

STUART:

It would mean millions of dollars annually. The saving would be in two directions. First, in preventing the direct losses caused by the diseases themselves, and, second, by reducing the cost of keeping present seedstocks sufficiently free from disease to guarantee maximum yields.

BEATTIE:

Can you give us an idea of how many seedlings you have grown as a result of your crosses?

STUART:

Over a quarter of a million, to date. Of these, approximately one hundred thousand were produced the past two seasons.

BEATTIE:

Is this work being conducted in cooperation with the State workers?

STUART:

Yes, cooperative potato-breeding programs are now being conducted with the following State Experiment Stations:- Louisiana, North Carolina, Maryland, New York, Michigan, Minnesota, North Dakota, and Iowa, while a number of others are assisting in testing some of the more promising seedlings. These stations, coupled with those of the Department at Presque Isle, Maine, and Greeley, Colorado, provide facilities for a greatly enlarged program of potato seed breeding work.

BEATTIE:

Now Stuart, you mentioned a while ago that good seed is the first essential for the production of a maximum yield of potatoes. You have also told us that the control of diseases is very important. Just what precautions can the average potato grower take to protect his crop from seed-borne diseases?

STUART:

First of all Beattie, if the grower is buying his seed potatoes, he should get the best certified seed available, then he should disinfect the seed before it is planted for the control of scab and rhizoctonia.

BEATTIE:

Is it a good practice for potato growers in general to disinfect their seed potatoes?

STUART:

Yes, it is a good practice. Growers who get high yields take the precaution of treating their seed potatoes for the control of scab and rhizoctonia.

BEATTIE:

What are the disinfectants most commonly used?

STUART:

The standard disinfectants are mercuric chlorid and formaldehyde solutions. The organic mercuric compounds are also often used. County agricultural agents can give potato growers detailed information as to the methods of treating their seed potatoes.

BEATTIE:

We've been talking about improving potato yields by the use of healthy seed. What other factors should we consider?

STUART:

Proper storage of the seed for one thing. Low-temperature storage of the seed is not essential, and a temperature of about 50 degrees up to the first of March, or even somewhat later, is not likely to cause any serious amount of sprouting. In the early-potato sections of the South where the crop is planted in January and February, low-temperature storage is not needed. It is often more important to protect the seed from cold.

Another thing, a more liberal use of seed will generally result in increased yields. Seed pieces that weigh from one to two ounces will give better results than smaller pieces. On good soil closer spacing will often give better stands and larger yields per acre. Of course, it goes without saying that the condition of the soil and its supply of plant food has a lot to do with yields.

BEATTIE:

Summing up then you would say, plant the best certified seed potatoes that you can secure; treat the seed for control of scab and other surface diseases; store the seed at a temperature around 50 degrees, except where it is to be kept longer than the middle of March; use plenty of seed; get your soil in the best possible condition; and wherever the soil is infested with diseases, plant disease resistant varieties.

STUART:

That's my idea exactly.

BEATTIE:

Thanks, Dr. Stuart, and I agree with you to the letter.